

XML Schema Namespace Management
Aerospace Operations Naming Convention
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1.0 Purpose

This white paper describes the convention for defining namespaces within the Aerospace Operation namespace of the Defense Information Systems Agency (DISA) Common Operating Environment (COE) Extensible Markup Language (XML) Registry.

2.0 Goal

The goal is to provide an agreed upon naming convention for the Aerospace Operations namespace for registering schemas in this registry.

3.0 Assumptions

1. Namespaces are a powerful tool for data standardization and reuse.¹
2. XML schemas registered in the Aerospace Operations (AOP) namespace of the DISA COE XML Registry will use this naming convention.
3. Where possible, a global perspective will be used (e.g., joint, not service specific; mission, not organization).
4. Conventions should specify the minimal guidance needed. Further subdivisions within a sub-domain should be done in the way most appropriate for that community of interest.
5. Schemas may be imported or included across namespaces at any level.

4.0 AOP Namespace Conventions

This section outlines the naming conventions. The motivation behind most of the conventions is consistency with the World Wide Web Consortium (W3C) namespace naming conventions and XML Schema specification.

4.1 Use URL Syntax

An XML Schema namespace name is just a label (i.e., a unique value). There is no requirement (or expectation) to resolve the namespace to an online resource. The XML Schema specification [5] states that target namespaces enable us to distinguish between definitions and declarations from different vocabularies. The schema specification also requires that target namespace names must be a valid URI. A URI may be a Universal Resource Locator (URL), a Universal Resource Name (URN), or both [1].

¹ Namespaces can be used to develop XML schemas in well-defined sub-domains. This allows multiple domains to examine the same object from different perspectives without the risk of naming collisions. For example, one can examine a satellite from many perspectives (space surveillance, satellite control, etc.). One could develop an XML schema in each of these domains, with each containing an element called "Satellite." Since each "Satellite" element is in a different namespace, there would be no naming conflict. Thus, using namespaces allows one to avoid ambiguity and focus on characterizing elements in a way most appropriate in one's own domain. In this way, one can make progress in one's own sub-domain without waiting for a standard definition to be agreed upon across all relevant sub-domains. However, if these XML schemas are registered and exposed to others, this generates the opportunity for reuse and creates the potential for data standardization.

Whether to use a URN or URL for an XML Schema namespace name is predominantly a matter of personal preference. However, this proposal uses URL syntax for the following reasons:

- URLs are integral to the World Wide Web (www). With a URL, there is *potentially* a resource as well. That resource could contain documentation (a schema, pointers to other schemas, etc.). If in the future the W3C decides to have namespace names point to resources, the appropriate syntax will already be in use and namespace names will not have to change.
- The URL syntax is familiar and memorable to www users.
- URL schema names are already managed [4]. Therefore, it would be easier to ensure namespace names are unique. In other words, with URLs it would be difficult to have two organizations with identical namespace names.
- This convention adopts a prefix of “xmlns:” to ensure that users realize that the target namespace name is a label, not an online resource.

4.2 Use Slash Character for Separating Hierarchical Components

RFC2396 [1] requires that URIs that are hierarchical in nature use the slash “/” character for separating hierarchical components. In this way, URIs are read from left-to-right with each slash denoting another level in the hierarchy.

4.3 Begin with lower case Letters and Use Only Unreserved Characters

Valid URLs in this namespace must use only unreserved characters as defined in [1]. These unreserved characters are a combination of upper and lower case letters, decimal digits and a limited set of punctuation marks and symbols shown in quotes below. These are the hyphen, underscore, period, exclamation point, tilde, asterisk, apostrophe, left parentheses, and right parentheses.

“_” “-” “.” “!” “~” “*” “'” “(” “)”

As a convention, use lower case letters for except where a capital letter delineates the start of a new word (e.g., spaceControl). Use of a capital letter to delineate the start of a new word is intended to improve readability.

4.4 Include an Enterprise Namespace in Each Sub-domain

Each sub-domain must have an enterprise namespace to contain common definitions that are applicable across that sub-domain. The enterprise namespace should be defined at the same level as the mission sub-domains across which it applies. For example, the Aerospace Operations enterprise namespace would be ‘xmlns://us/mil/aop’.

4.5 Publish Acronyms and Abbreviations

Use acronyms and abbreviations where appropriate, but be sure their expansion is published in the enterprise sub-domain (see convention 4.4).

5.0 Syntax Summary

Note that this syntax summary applies only to the Aerospace Operations namespace and is not meant to be all-inclusive.

xmlns://country/governmentBranch/disaNamespaceAbbrev/missionSubdomain

Token	Meaning
<i>xmlns://</i>	Begin each namespace name with “xmlns://” to denote that the name is an XML namespace name using URI syntax.
<i>country</i>	The second field is an abbreviation for the relevant country (e.g., us) or group of nations (e.g., nato).
<i>governmentBranch</i>	For United States government namespaces, the third field designates the branch of the government (i.e., government or military as gov or mil, respectively).
<i>disaNamespaceAbbrev</i>	For the DISA namespace registry, the fourth field is the DISA XML Registry namespace abbreviation. For example, DISA’s Aerospace Operations namespace abbreviaion is “aop”. For a list of DISA XML Registry namespaces and their abbreviations, see: http://diides.ncr.disa.mil/xmlreg/user/namespace_list.cfm
<i>missionSubdomain</i>	Subdivisions within the Aerospace Operations namespace should be along mission lines. Therefore, the Aerospace Operations namespace will have a list of n mission sub-domains. An example, related to the four sub-domains which apply to the USCINCSpace missions are: <ul style="list-style-type: none"> • Space Control, • Space Support, • Force Enhancement, and • Force Application. Other communities of interest will add to this linear list of mission namespaces as needed.

6.0 AOP Namespace Naming Examples

Community of Interest	Namespace Designation
National Aeronautics and Space Administration (NASA)	xmlns://us/gov/nasa
COE XML Registry Aerospace Operations namespace Enterprise level definitions	xmlns://us/mil/aop
COE XML Registry Aerospace Operations namespace USCINCSpace missions	xmlns://us/mil/aop/spaceControl xmlns://us/mil/aop/spaceSupport xmlns://us/mil/aop/forceEnhancement xmlns://us/mil/aop/forceApplication
COE XML Registry Aerospace Operations namespace USCINCSpace Space Control mission Space Surveillance portion of Space Control mission	xmlns://us/mil/aop/spaceControl/surveillance
COE XML Registry General Military Intelligence namespace Enterprise level definitions	xmlns://us/mil/gmi

7.0 References

1. Berners-Lee, T., Fielding, R. and Masinter, L., *Uniform Resource Identifiers (URI): Generic Syntax*, RFC 2396, August 1998. Available online at: <http://www.ietf.org/rfc/rfc2396.txt>
2. COE XML Registry home page, <http://diides.ncr.disa.mil/xmlreg/user/index.cfm>
3. Masinter, L., Alvestrand, H., Zigmund, D., and Petke R., *Guidelines for new URL Schemes*, RFC 2718, November 1999. Available online at: <http://www.ietf.org/rfc/rfc2718.txt>
4. The World Wide Web Consortium (W3C) web page on *Naming and Addressing: URIs, URLs, . . .*, available online at <http://www.w3.org/Addressing/>
5. W3C Recommendation, *XML Schema Part 0: Primer*, 2 May 2001. Available online at: <http://www.w3.org/TR/xmlschema-0>

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